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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/022,503	12/20/2001	Hiromi Honda	2922.0070	2845

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FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER

LAM, CATHY FONG FONG

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 02/13/2003

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/022,503

Applicant(s)

HONDA ET AL.

Examiner

Cathy Lam

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 December 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-11 is/are pending in the application.
- 4a) Of the above claim(s) 11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

In view of the amendment and remarks filed on 30th Dec. 2002, the 112 rejections have been withdrawn, however the claims are continued to be unpatentable as following:

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3-5, and 7-8 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by O’Keele (US 3610811).

O’Keele discloses a printed circuit board comprised of a plurality of conductive plated through holes and conductive pads (50,52) on the rim of the through holes. Conductive wiring patterns (20,22,24) are formed onto the surfaces of an insulating panel(18) and are in electrical contact with periphery of the conductive plated through holes (col 3 L 50-56).

A solder resist material (14) is covering at least a portion of the circuit board surface along the perimeter of each plated through hole (or conductive pads) (col 2 L 45-50 & Fig. 4).

The solder resist can be put down onto the entire surface perimeter of the plated through holes (col 2 L 63-66). The solder resist can be applied by silk screen technique (col 4 L 43-45). Component leads (62) are inserted into the plated through holes followed with a solder flux applied into the plated through holes (col 4 L 69-71).

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O'Keele also mentioned that oxidizing the conductive surface (or pad) is another way to prevent solder bridging (col 2 L 4-7).

Regarding to the limitation of silk screen pattern, Applicant is reminded that it is the product itself which must be new and unobvious, see *In re Pinkington* 162 USPQ 145, 147 (C.C.P.A. 1969). Product by process claimed are not patentably distinct over product claims unless it can be shown that the product produced by the process is in some manner measurably distinct from the product produced by another process, therefore there will be no weight given to the product by process verses product claims.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Keele (US 3610811) in view of Sarkhel et al (US 5730932).

O'Keele discloses the present invention but silent about using a lead free solder in the through holes

Sarkhel discloses a solder alloy which is used for bonding a component lead to a printed wiring board. The solder alloy is a lead free solder comprised of bismuth (col 2 L 54-56).

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In view of O'Keele and Sarkhel's teachings, one skill in the art would choose a Pb free solder that includes bismuth for bonding because it forms a chemically and thermally stable bond (see Sarkhel col 2 L 45-50).

Regarding to having both solder resist and a silk screen pattern laminated to the lands of the printed wiring board. Since applicant has not specifically pointed out any advantages or criticalities of using two layers, the examiner takes the position that the prior art teaching of using only one layer would perform the same job as well.

Response to Arguments

5. Applicant's arguments filed 30th Dec. 2002 have been fully considered but they are not persuasive. Applicant disagrees the restriction requirement and the art rejections made in the last office action and raises the following issues:

A. Applicant believes that claim 11 does not pose any serious burden, it should be examined together with group I (ie. claims 1-10).

B. O'Keele's solder resist is used as a gas escape port and not for maintaining a connection portion between the surface of land(s) to which a wiring pattern is connected and the wiring pattern is in a state not wetted by solder.

6. In response to the above issues:

A. Claim 11 is directed to an electronic apparatus which could be (or include) a more complex structure. A search for apparatus belongs to another class and subclass.

This application contains claim 11 is drawn to an invention nonelected with traverse in Paper No. 8. A complete reply to the final rejection must include cancelation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

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B. O'Keele teaches that a wiring pattern (20,22,24) are formed onto the surface(s) of the substrate (18) (Fig. 1). The wiring pattern (20,22,24) are connected to through holes which are plated with conductive material (50,52) (Fig. 4). A solder resist (14) is silk screen printed onto the periphery of the plated through holes (col 4 L 42-45).

O'Keele clearly teaches that the solder resist pattern is intended to keep solder from being deposited on the conductor lines and pads, thereby reducing solder bridges from excess solder deposits (col 2 L 15-19).

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cathy Lam whose telephone number is (703) 308-2418. The examiner can normally be reached on 9am-6pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (703) 308-3822. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9604 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Cathy Lam
Primary Examiner
Art Unit 1775

cfl
February 10, 2003